IN THE CLAIMS

Claim 1 (original): Distance measuring device comprising an emitter and a receiver, said emitter being arranged to produce a magnetic field by means of a resonant circuit having a resonant frequency, said receiver being arranged to pick up at said resonant frequency the magnetic field emitted by the emitter and convert the strength of the magnetic field picked up into a first signal having an energy value, said emitter being arranged to produce said magnetic field intermittently, each emission having a predetermined energy, said receiver being connected to a detector arranged to determine a distance measurement signal representing the distance between the emitter and the receiver, wherein said detector is arranged to determine said distance measurement signal by correlation of said first signal with a second predetermined signal having a waveform representative of a signal to be picked up by the receiver, said second signal comprising a time window having a predetermined duration and comprising at least an initial sub-period, an intermediate sub-period and a final sub-period, said second signal being an alternating signal synchronized with the first signal and whereof the amplitude is attenuated during the initial and final periods and substantially at a maximum during the intermediate period.

Claim 2 (original): Distance measuring device as claimed in claim 1, wherein said detector is arranged to implement said correlation by multiplication and integration with said second signal, which second signal is formed by said waveform representing the signal to be picked up as obtained in the absence of perturbation.

Claim 3 (original): Distance measuring device as claimed in claim 1, wherein said detector is arranged to implement said correlation by multiplication and integration with said second signal, which second signal is formed by said waveform representing a sinusoidal

waveform in synchronization with the first signal itself multiplied by a Tukey window with reduced taper factor.

Claim 4 (original): Distance measuring device as claimed in claim 1, wherein said detector is arranged to implement said correlation by multiplication and integration with said second signal, which second signal is formed by said waveform representing a square waveform in synchronization with the first signal.

Claim 5 (currently amended): Distance measuring device as claimed in ~~one of claims 1 to 4~~ claim 1, wherein said emitter is housed in a case and arranged to produce said magnetic field outside said case with a power less than 1 mTesla, preferably less than 1 µTesla.

Claim 6 (currently amended): Distance measuring device as claimed in ~~one of claims 1 to 5~~ claim 1, wherein said emitter comprises an inductance and a capacitor connected in series with one another and connected by means of electrical conductors to an energizing circuit, said energizing circuit comprising a voltage source and a resistor connected, through said electrical conductors, in series with the inductance and the capacitor, said energizing circuit also comprising a switching element making it possible to connect said electrical conductors to one another.

Claim 7 (original): Distance measuring device as claimed in claim 6, wherein said energizing circuit is placed close to the inductance and the capacitor and forms an autonomous unit with respect to the receiver.

Claim 8 (currently amended): Sleep disorder detector comprising a distance measuring device as claimed in ~~one of claims 1 to 7~~ claim 1, wherein said device is mounted on a support arranged to be applied onto the head of a living being so as to measure movements of the mouth.

Claim 9 (original): Sleep disorder detector as claimed in claim 8, wherein said detector comprises an analyzer having an input connected to the device and arranged to receive said distance measurement, said analyzer being arranged to divide said distance measurement signal into fractional parts and apply time windows to each fractional part of the distance measurement signal thus obtained, said detector also comprising a memory for storing a series of signal forms characterizing in a time window movements of the mouth of a living being, said analyzer being arranged to compare said fractional parts of the distance measurement signal with each of said forms of the series and to produce a detection signal in the event of correspondence between said fractional part and said form, the detection signal also comprising an indicator indicating the form having led to said correspondence.

Claim 10 (original): Sleep disorder detector as claimed in claim 9, wherein said series comprises a first form indicating a sudden closing of the mouth, a second form indicating a slow opening of the mouth followed by a slow closing of the mouth, and a third form indicating an increase in the amplitude of the signal at the breathing frequency followed by a decrease in the signal at the breathing frequency.

Claim 11 (original): Sleep disorder detector as claimed in claim 9, wherein said analyzer is arranged to produce an apnea signal when for the same window the detection signal indicates both a first and a third form or indicates both a second and a third form.

Claim 12 (currently amended): Sleep disorder detector as claimed in one of claims 9 to 11 claim 9, wherein said series comprises a fourth form indicating snoring.

Claim 13 (currently amended): Sleep disorder detector as claimed in one of claims 9 to 12 claim 9, wherein said detector comprises an analyzer having an input connected to the device and arranged to

receive said distance measurement signal, said analyzer being arranged to identify, in said distance measurement signal, signal forms representing brief and recurrent events and to produce a detection signal at each occurrence of such signals, the detection signal also comprising an indicator indicating the form having led to said detection signal.

Claim 14 (original): Sleep disorder detector as claimed in claim 13, this detector comprising a decision element using said detection signal to provide an indication of insufficient, correct or excessive treatment for the targeted sleep disorders.

Claim 15. (currently amended): Movement analyzer comprising a distance measuring device as claimed in ~~one of claims 1 to 8~~ <u>claim 1</u>, wherein said device is mounted on a support arranged to be applied around a joint of a living being so as to measure the characteristics and/or statistics of the movements of this joint.

Claim 16 (original): Detector of periodic movements of limbs during sleep comprising a movement analyzer as claimed in claim 15, wherein said analyzer is arranged to identify, in said distance measurement signal, signal forms representing brief and recurrent events and to produce a detection signal at each occurrence of such signals, the detection signal also comprising an indicator indicating the form having led to said detection signal.

Claim 17 (original): Equipment for monitoring the development of Parkinson's disease comprising a movement analyzer as claimed in claim 15, wherein said analyzer is arranged to identify, in said distance measurement signal, signal forms representing tremor, rigidity and stooping states in order to produce a detection signal, the detection signal also comprising an indicator indicating the form having led to said detection signal.

Claim 18 (original): Equipment for detecting a loss of vigilance

comprising a movement analyzer as claimed in claim 15, wherein said measuring device is placed so as to measure the inclination of the head and said analyzer is arranged to identify, in said distance measurement signal, events of slow inclination and sudden lifting of the head, in order to produce a detection signal.

Claim 19 (original): Equipment for detecting a loss of vigilance comprising a movement analyzer as claimed in claim 15, wherein said measuring device is arranged so as to measure the amplitude of opening of the eyelids and said analyzer is arranged to identify, in said distance measurement signal, events of recurrent blinking of the eyelids and a state of progressive decrease in the mean amplitude of opening of the eyelids, in order to produce a detection signal.